

NEW HOPLISOIDES FROM THE UNITED STATES  
(HYMENOPTERA: SPHECIDAE)

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Five species of the Nyssonine genus *Hoplisoides* Gribodo are described to facilitate a forthcoming revision. This genus is distinguished in the tribe Gorytini by the following: Hindwing media diverging at cu-a, omaulus present and continued to midline of venter by the acetabular carina, episternal sulcus not directed forward toward omaulus, tergite I sessile, propodeum not coarsely areolate, and female forepulvilli not larger than others.

Of the species described below, four belong to the *denticulatus* group characterized by an angled hindwing cu-a and unusual pubescence on male sternites IV to V at least. The fifth species, *glabratus*, belongs to the *tricolor* group in which male tergite VII is exerted.

Holotypes of *glabratus*, *carinatus*, and *floridicus* are in the Entomology Museum of the University of California at Davis, *projectus* is in the California Academy of Science, and *cazieri* is in the American Museum of Natural History.

***Hoplisoides carinatus* R. Bohart, n. sp.**

*Male holotype*: Length 8.0 mm. Black, marked with yellow as follows: clypeus, frons laterally, scape and pedicel in front, pronotal ridge and lobe, weak scutellar spots, distal femoral spot, tibial stripe, foretarsi partly, apical bands on tergites becoming very broad posteriorly, lateral spots on sternites II–VI. Wings mostly clear, forewing yellow along costa and in stigma, a dark cloud covering marginal cell, one-half of second submarginal and one-third of third submarginal. Pubescence silvery, abundant, pulverulent; sternites IV to VI and III laterally with dense erect pubescence. Punctuation moderate to sparse, macropunctures separated by 1 to 2 diameters on scutum, 3 to 4 on mesopleuron and propodeum laterally, 1 to 4 on tergite I, 1 to 3 in yellow bands of tergites II to VI. Clypeus convex, a little more sharply rounded subapically, about 1.5 times as broad as long, least interocular distance about equal to length of clypeus or scape, flagellomere I about 1.5 times as long as broad, II to IV about as broad as long, VII projecting beneath VIII almost to IX, polished spots under VIII to X, length of XI about 1.7 times breadth, sternaulus complete; metapleuron narrow and parallel sided below upper pit, lower pit much smaller than midcellus; forewing cu-a sharply bent just before cubitus; propodeal enclosure with 14 complete longitudinal ridges; sternite IV with a faint lateral denticle, V with an oblique lateral carina which is low and of even height throughout; tergite VI narrowly rounded at apex, sides angled at about 75 degrees, VII concealed.

*Female*: Differing in color from male. Head and thorax about half yellow and half red, abdomen with venter mostly red, dorsum mostly yellow; clypeus red basally and yellow apically, frons and scutum mostly red, scutellum yellow and metanotum usually so, pygidium extensively yellow. Wings about as in male, but with a light brownish yellow median streak in forewing. Pygidium mostly smooth between scattered macropunctures, limiting carinae gently curved.

Holotype male (UCD), Madera Canyon, Santa Cruz Co., Arizona, 4880 feet, June 27, 1963 (F. D. Parker). Paratypes, 32 males, 7 females from Arizona: Sedona, Continental, Phoenix, Toltec, Superior, Madera Canyon, Tucson, Nogales, Apache, Sahuarita, Rock Spring, Bowie, San Simon. Other paratypes, 23 males from Sonora, Mexico: Cocorit (F. Parker, L. Stange), near Magdalena (F. Parker, L. Stange). Dates of collection are April to July, and October.

A closely related species, *confertus* (W. Fox), differs in the male by its much higher carina on sternite V. This carina is nearly as high as long and higher posteriorly than anteriorly. In *carinatus* the carina is low throughout. Females of the two species are quite similar. In *carinatus* the forewing has a lighter brown streak and the pygidium is extensively yellow rather than all red.

**Hoplisoides cazieri** R. Bohart, n. sp.

*Male holotype*: Length 8.5 mm. Black to dark brown, marked with yellow as follows: mandible spot, clypeus, inner orbit, scape and pedicel in front, pronotal ridge and lobe, scutellar band, femora and tibiae within, fore and midtarsi partly, moderate apical bands on tergites I to IV, V and VI mostly, apical bands on sternites II to VI; flagellum reddish brown in front; wings mostly clear, forewing a little stained medially, a dark cloud in marginal cell, two-thirds of second submarginal and one-third of third submarginal, stigma deep yellow. Pubescence silvery, pulverulent, mesopleuron ventrally with short thick pile, sternites III to V with dense erect pubescence, VI practically bare. Punctuation fine to coarse, mostly separated by about a puncture diameter but closer on yellow areas of tergites II to VI; punctures of scutellum, metanotum and yellow part of tergite I sparse. Clypeus convex, bulging a little subapically, about twice as broad as long, least interocular distance about equal to length of scape but greater than clypeal length; flagellomere I about 1.6 times as long as broad, II to V as broad as long, VI 1.5 times and VII 2.0 times as broad as median length; VII reaching base of IX beneath, polished or concave spots beneath VIII to XI, XI about 1.7 times as long as broad; sternaulus weak, fading anteriorly; metapleuron narrow and parallel sided below upper pit, lower pit much smaller than midocellus; forewing cu-a sharply rounded just before cubitus; propodeal enclosure with 14 ridges; sternites IV and V without lateral denticles or carinae; tergite VI narrowly rounded at apex, sides angled at about 75 degrees, VII concealed.

*Female*: Markings about as in male. With a dark mediobasal clypeal spot, a yellow upper mesopleural spot and a metanotal band, a darker brown streak along middle of forewing, sternites V to VI nearly all yellow. Tarsal and tibial setae of mid and hindlegs unusually stout. Pygidium entirely yellow, coarsely and closely striatopunctate, rather broadly rounded at apex, lateral carinae gently curved.

Holotype male (American Museum of Natural History), Carr Canyon, Huachuca Mts., Cochise Co., Arizona, June 3, 1952 (M. Cazier, W. Gertsch, R. Schrammel). Paratype female, Molino Basin, Mt. Lemmon, near Tucson, Arizona, May 20, 1953 (A. and H. Dietrich, Cornell Univ.).

*H. cazieri* belongs to the *denticulatus* group and considering the unarmed male sternites and broad flagellomeres VI and VII in the male, is related to *floridicus*. There are many color differences, however. In addition the male of *cazieri* has sternite VI nearly bare, the propodeum posteriorly in both sexes is much less densely punctate, male flagellomeres II to V are not angled beneath in profile, female leg setation is much stouter, and the female pygidium is closely striatopunctate instead of polished with scattered macropunctures. The species is named for M. A. Cazier who has contributed greatly to our knowledge of wasps in the southwest.

***Hoplisoides floridicus* R. Bohart, n. sp.**

*Male holotype*: Length 8.5 mm. Black, marked with yellow and red. Yellow are: mandible mostly, clypeus, lower frons, lower inner orbit, scape and pedicel, pronotum all across, lateral scutal dot, upper mesopleural spot, scutellum mostly, legs partly but with much red infusion, apical margins of tergites I to V, broadened laterally on I to III, especially narrow on IV to V; red are: infusion with yellow on the thorax, broad median area across tergites I and II, sternite I, apical band on sternite II, lateral spot on III; wings light brown, paler toward base and trailing edge, darker in marginal cell and most of second and third submarginals, a light brownish streak on forewing, stigma yellow. Pubescence silvery, moderately abundant, pulverulent; sternites III to VI with dense erect pubescence, thickest laterally. Punctuation rather fine and close on upper frons, coarse on scutum and pleuron but averaging one puncture diameter apart, irregularly coarse and close on propodeum posteriorly, rather fine and sparse on scutellum and tergite I, fine to moderate but well spaced on tergites II to V, rather coarse and close on VI. Clypeus convex, a little bulging subapically, about 1.8 times as broad as long; least interocular distance about 1.2 times median clypeal length; flagellomere I about 1.3 times as long as broad, II to V a little broader than long, VI and VII about 1.5 times broader than long, VII projecting beneath and almost touching IX, polished spots beneath VIII to XI, length of XI about 1.7 times breadth; sternaulus strong and complete; metapleuron nearly parallel sided below upper pit, lower pit much smaller than midocellus; forewing cu-a sharply bent just before cubitus; propodeal enclosure with 10 longitudinal ridges; sternites IV and V without lateral denticles or carinae; tergite VI narrowly rounded at apex, sides angled at about 75 degrees, VII concealed.

*Female*: About as male. Facial markings including first few flagellar segments infused with red, pleuron sometimes mostly red, metanotum marked with yellow or red, propodeum with two large red spots, wings darker brown. Pubescence becoming fulvous on thorax. Pygidium smooth between scattered macropunctures, limiting carinae gently curved.

Holotype male (UCD), Orlando, Florida, March, 1944 (R. and G. Bohart). Paratypes, 3 males, 7 females, March to October from Florida: Orlando, Lake Placid, Fort Lauderdale, Highlands Hammock State Park, Brooksville, Lacoochee, Cocoa. Paratypes in collections of University of Kansas, Museum of Comparative Zoology at Harvard, and G. R. Ferguson.

A relationship with *denticulatus* Packard is obvious. However, the thoracic venter of male *floridicus*, while pubescent, lacks the rather long pile found in *denticulatus*. Also, *floridicus* has no denticles on male sternite V and flagellomeres VI to VII are considerably more produced downward. Females of the two species are very close structurally. In my material *denticulatus* females always have the clypeus mottled black and yellow or all black instead of reddish yellow. Also, the metanotum of *denticulatus* is black or nearly so and that of *floridicus* is extensively yellow or red. One other species from Florida with similar appearance is *placidus* F. Smith. However, it is in a different species group with gently curved hindwing cu-a, large orifice on metapleuron below, no unusual pubescence of male sternites III to VI, more slender antennae and male hindtarsi, and bent lateral pygidial carina in the female. There is a structural similarity between *floridicus* and *cazieri*, but the latter has a weak sternaulus and other differences mentioned under the latter species.

***Hoplisoides projectus* R. Bohart, n. sp.**

*Male holotype*: Length 9.0 mm. Black, marked with yellow as follows: mandible, clypeus, frons below and laterally, scape and pedicel in front, pronotal ridge and lobe, scutellum, metanotal dot, lateral dot on scutum, large propodeal spots, upper mesopleuron, femora partly, tibiae and tarsi mostly in front, broad and irregularly margined apical bands on tergites I to V, broadest laterally, that on I deeply V-shaped; spot on VI; lateral spots on sternites II to IV; reddish brown are: femora partly, hindtarsus apically. Wings smoky, stigma brownish yellow, a dark cloud in marginal cell, upper three-fourths of second submarginal and two-thirds of third submarginal. Pubescence silvery, abundant, pulverulent; sternites IV to VI and III laterally with dense erect pubescence. Punctuation moderate to sparse, macropunctures separated by 1 to 2 diameters on scutum, 3 to 4 on mesopleuron and propodeum laterally, sparse and fine on tergite I, more coarse on II-V, coarse and rather close on VI. Clypeus convex, a little more sharply rounded subapically, nearly twice as broad as long, least interocular distance greater than length of clypeus or scape, flagellomere I about 1.5 times as long as broad, II to IV about as broad as long, VII projecting beneath VIII and almost reaching IX, polished spots beneath VIII to XI, about 1.7 times breadth; sternaulus complete; metapleuron narrow and parallel sided below upper pit, lower pit much smaller than midocellus; forewing cu-a sharply bent just before cubitus; propodeal enclosure with 10 longitudinal ridges; sternite IV with a faint lateral denticle, V with an oblique lateral carina which is low but rounded in profile and highest near anterior end; tergite VI narrowly rounded at apex, sides angled at about 80 degrees; VII concealed.

*Female*: Yellow markings of gaster much more extensive than in male, covering most of dorsum; band on I deeply V-notched at base, that of II bordered with a thin black band basally; tergite VI all dark red; markings of venter about as in male. Red are: clypeus mostly, narrow orbital line, entire antenna in front but darkening toward apex, legs mostly. Metanotum yellow. Wings about as in male but with a light brownish yellow median streak in forewing. Pygidium with



coarse, irregular striae interspersed with elongate punctures, apex blunt, lateral carinae gently curved.

Holotype male (California Academy of Sciences), Los Banos, Merced Co., California, May 23, 1918 (E. P. Van Duzee). Paratypes, 3 males, 1 female, from California: Tracy (P. D. Hurd, CIS), Hanford (F. H. Surber, E. I. Schlinger, UCD), Lindsay (W. Davidson, USNM). Paratypes were collected in July and August.

This San Joaquin Valley species is similar to both *confertus* and *carinatus*. The male of *projectus* has the eyes more widely spaced than in the other two and the lateral carina of sternite V is lower than that of *confertus* and more rounded than that of *carinatus*. In the female the pygidium of *projectus* is more completely and coarsely longitudinally striate than in the other two species. In the material before me, the yellow band of tergite I in both sexes of *projectus* has a much sharper and deeper V-incision than in the others.

**Hoplisoides glabratus** R. Bohart, n. sp.

*Male holotype*: Length 6.5 mm. Black, extensively marked with red and pale yellow. Orange-red are: thorax laterally and propodeum except enclosure, legs except for first two pair which have tibiae and tarsi all yellow as well as yellow marks on coxae and femora, wing bases, tergites I and II broadly at base, venter of gaster mostly; yellow are: mandible mostly, labrum, clypeus, lower frons and attached broad orbital stripe nearly to level of midocellus, scape and pedicel in front, pronotal ridge and lobe, scutellum mostly, legs as given above, tergites I to V broadly across apex, spot on tergite VI, scattered marks on sternites II to IV; wings light brown with darker spot covering marginal, second submarginal and most of third submarginal cells, stigma orange-yellow. Pubescence short, mostly inconspicuous, silvery, becoming reddish on vertex and notum. Punctuation nearly absent, a few fine punctures which are most noticeable between ocelli and on tergites III to VII. Clypeus smoothly convex, about twice as broad as long; least interocular distance about 1.2 times median clypeal length; flagellomere I a little longer than broad, II to VII broader than long, VII broadest, IV nodose beneath, VIII to X longer than broad and with polished concavities beneath, XI obconic and 3.0 times as broad as long; sternaulus complete and without associated teeth; metapleuron narrow, tapering gradually below, lower pit much smaller than midocellus; forewing cu-a slightly curved near cubitus; propodeal enclosure smooth except for median groove; tergite VI rounded distally, VII exposed at tip.

*Female*: About as in male except: Length 7 to 9 mm. Antenna and face almost to level of midocellus all yellow, clypeus sometimes a little red medially, outer orbit and venter of thorax mostly yellow, gaster mostly red but darkening posteriorly; tergite I with two whitish spots, II and III with irregular narrow ivory bands, IV and V ivory spotted. Antenna evenly and slightly clubbed, flagellomere I about 1.5 times as long as broad; pygidium forming an angle of 45 degrees, surface pruinose and with separated macropunctures.

Holotype male (UCD), Granite Pass, 18 miles north of Rodeo, New Mexico, on *Baileya pleniradiata*, August 25, 1958 (R. M. Bohart). Paratypes, 24 males, 106 females, near Rodeo, New Mexico, August

and September (R. Bohart, D. Linsdale, P. Hurd, H. Evans, *et al.*). Metatypes, 4 males, 12 females from localities as follows: Arizona: Pearce, Willcox, Douglas, Portal; New Mexico: Deming, San Antonio; Colorado: Colorado Springs; Texas: Odessa, Marfa.

This strikingly different species is apparently related to *tricolor* Cresson which also has male tergite VII exserted and a similar female clypeus. However, *glabratus* differs from *tricolor* as well as from most other *Hoplisoides* by the nearly impunctate pleuron. A unique feature is the all lemon yellow antenna and frons in the female. The ventrally nodose flagellomere IV in male *glabratus* is differentiating, also.

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### BOOK REVIEW

**The Pollen-Collecting Bees of the Anthidiini of California** (Hymenoptera: Megachilidae). By A. A. Grigarick and L. A. Stange. Bulletin of the California Insect Survey, volume 9, 113 pp., 229 figs. University of California Press, Berkeley and Los Angeles. 1968. Price: \$2.50.

This is a detailed taxonomic treatment of the California bees of the non-parasitic genera of the tribe Anthidiini, family Megachilidae. They comprise the genera *Trachusa* Panzer, *Heteranthidium* Cockerell, *Anthidium* Fabricius, *Callanthidium* Cockerell, *Dianthidium* Cockerell, and *Anthidiellum* Cockerell. The parasitic Anthidiini (which are not included) are principally the genera *Stelis* Panzer, *Chelynia* Provancher, and *Dioxys* Lepeletier and Serville.

The Anthidiini and Megachilini make up the subfamily Megachilinae, and the Megachilini of California have already been treated in 1955 by Hurd and Michener. This was published as volume 3 of the *Bulletin* of the California Insect Survey.

The non-parasitic (pollen-collecting) Anthidiini amount to 42 species in California. By far the largest genus is *Anthidium* with 19 species, followed by *Dianthidium* with 13. *Heteranthidium* has only 4 species, and *Trachusa*, *Callanthidium*, and *Anthidiellum* have but 2 California species each. The authors give a characterization of the tribe and a key to the genera that occur in California. They also give keys to males and females of the species of all the included genera. They illustrate the diagnostic structural characters. A complete taxonomic and biologic bibliography is given for each species, and the characters of each species are discussed, emphasizing similarities and differences between related species. Specific descriptions are not included. The known biological information about each species is given, with references to sources.

A spot map showing the distribution within California is given for every species in this work, and the California distribution records are given in full. The males of 6 species are illustrated at many times life size in lateral aspect, the drawings beautifully executed and clearly reproduced. There are 2 pages of photographs of nests.

This volume is printed in near-black offset, on a large 7- $\times$ 9-inch, double column page.—B. D. BURKS, *Systematic Entomology Laboratory, Entomology Research Division, ARS, USDA*. Mail address: c/o U. S. National Museum, Washington, D. C. 20560.